

## WHAT IS CLAIMED IS:

1. A combustion catalyst for removing organic compounds, which comprises a first catalyst comprising a metal oxide containing at least one of the elements of the platinum group, and a second catalyst comprising a mixture of zeolite with a metal oxide containing at least one of the elements of the platinum group; said first catalyst and said second catalyst being arranged in a manner such that organic compounds to be removed are contacted first with the first catalyst and then with the second catalyst.

2. The combustion catalyst for removing organic compounds according to claim 1, wherein the ratio of the first catalyst to the second catalyst is in the range from 1:20 to 2:1 by weight.

3. The combustion catalyst for removing organic compounds according to claim 1, wherein the ratio of zeolite to a metal oxide containing at least one of the elements of the platinum group in the mixture of the second catalyst is in the range from 20:1 to 1:20 by weight.

4. The combustion catalyst for removing organic compounds according to claim 1, wherein the zeolite is ion-exchanged with at least one ionic species selected from the group consisting of those of the groups IA and IIA.

5. The combustion catalyst for removing organic compounds according to claim 1, wherein the metal oxide in the mixture of the second catalyst is alumina having pore size distribution such that, where "a" represents a pore radius in Å at the maximum of the pore radius distribution curve, the accumulated pore volume of pores having radii in the range of  $(a - 25) \text{ Å}$  to  $(a + 25) \text{ Å}$  is at least 65% of the total volume of all the pores, said alumina containing less than 1% by weight of rare earth elements.

6. The combustion catalyst for removing organic compounds according to claim 1, wherein the metal oxide of the

first catalyst is alumina having a pore size distribution such that, where "a" represents a pore radius in Å at the maximum of the pore radius distribution curve, the accumulated pore volume of pores having radii in the range of  $(a - 25) \text{ Å}$  to  $(a + 25) \text{ Å}$  is at least 65% of the total volume of all the pores, said alumina containing less than 1% by weight of rare earth elements.

7. A process for removing organic compounds by catalytic combustion, said process comprising the step of contacting organic compounds with a combustion catalyst as claimed in claim 1, in a manner such that the organic compounds are contacted first with the first catalyst of the combustion catalyst and then with the second catalyst of the combustion catalyst.

8. The process for removing organic compounds according to claim 7, wherein the ratio of the first catalyst to the second catalyst is in the range from 1:20 to 2:1 by weight.

9. The process for removing organic compounds according to claim 7, wherein the ratio of zeolite to a metal oxide containing at least one of the elements of the platinum group in the mixture of the second catalyst is in the range from 20:1 to 1:20 by weight.

10. The process for removing organic compounds according to claim 7, wherein the zeolite is ion-exchanged with at least one ionic species selected from the group consisting of those of groups IA and IIA.

11. The process for removing organic compounds according to claim 7, wherein the metal oxide in the mixture of the second catalyst is alumina having a pore size distribution such that, where "a" represents a pore radius in Å at the maximum of the pore radius distribution curve, the accumulated pore volume of pores having radii in the range of  $(a - 25) \text{ Å}$  to  $(a + 25) \text{ Å}$  is at least 65% of the total volume of all the pores, said alumina containing less than 1% by weight of rare earth elements.

12. The process for removing organic compounds according to claim 7, wherein the metal oxide of the first catalyst is alumina having a pore size distribution such that, where "a" represents a pore radius in Å at the maximum of the pore radius distribution curve, the accumulated pore volume of pores having radii in the range of  $(a - 25) \text{ Å}$  to  $(a + 25) \text{ Å}$  is at least 65% of the total volume of all the pores, said alumina containing less than 1% by weight of rare earth elements.

13. The process for removing organic compounds according to claim 7, wherein the organic compounds comprises at least one halogen-containing organic compound.

14. The process for removing organic compounds according to claim 7, wherein the organic compounds show a vapor pressure of 0.01 kPa or higher at a temperature of 293.15°K.

15. The process for removing organic compounds according to claim 7, wherein a gas containing the organic compounds is contacted with the combustion catalyst, the organic compounds being present in a concentration of not greater than about 1% by volume in said gas.

16. The process for removing organic compounds according to claim 7, wherein the organic compounds comprise at least one  $C_2$  hydrocarbon.

17. The process for removing organic compounds according to claim 7, wherein the organic compounds comprise at least one chlorinated  $C_2$  hydrocarbon.

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